

CLAIMS

1. A chair having synchronous movement of back and seat assemblies and backward and forward passive tilt capabilities comprising:

a chair having a seat assembly, a back assembly and a frame assembly for supporting said seat and said back assemblies;

a first link operatively connected to said back assembly, to said frame assembly and to said seat assembly;

a first pivot connecting said frame assembly and said first link wherein said first link pivots relative to said frame assembly;

a second pivot connecting said first link and said seat assembly wherein said first link pivots relative to said seat assembly, whereby said second pivot is approximately located beneath a chair occupant's hip joint;

a second link operatively connected to said frame assembly and to a third link;

a third pivot connecting said frame assembly and said second link;

a third link operatively connected to said seat assembly and to said second link;

a fourth pivot connecting said second link and said third link; and

a biasing member mounted to said frame assembly and being deformable.

2. The chair of claim 1 wherein:

said biasing member is formed of a resilient material.

3. The chair of claim 2 wherein:

said biasing member is formed of a rubber block.

4. The chair of claim 3 wherein:

said block is movable between neutral, upwardly deformed and downwardly deformed positions.

5. The chair of claim 4 wherein:

said block is upwardly deformable when said back assembly tilts rearwardly away from said seat assembly while said seat assembly is raised.

6. The chair of claim 5 wherein:

said block is downwardly deformable when said back assembly tilts forwardly toward said seat assembly while said seat assembly is lowered.

7. The chair of claim 6 wherein:

the movement of the rising or lowering seat assembly is at a lower rate than the movement rearwardly or forwardly of said back assembly.

8. The chair of claim 2 wherein:

a chair user shifting his/her body weight causes said resilient material to deform.

9. The chair of claim 8 wherein:

from an upright neutral position a weight shift by a chair occupant causes said seat assembly to tilt downwardly thereby tilting said back assembly forwardly toward said seat assembly;

from an upright neutral position a weight shift by a chair occupant causes said back assembly to tilt rearwardly and said seat assembly to lift; and

movement away from said neutral position without a weight shift by a chair occupant is minimized.

10. The chair of claim 1 wherein:

said first pivot is fixed in position relative to said frame assembly;
said second pivot is movable relative to said frame assembly;
said third pivot is fixed in position relative to said frame assembly; and
said fourth pivot is movable relative to said frame assembly.

11. The chair of claim 1 wherein:
movement of said back assembly causes said first link to move said seat assembly;
movement of said seat assembly pivots said second link; and
pivoting said second link causes said biasing member to deform.
12. The chair of claim 11 wherein:
movement of said seat assembly induces stress in said biasing member.
13. The chair of claim 1 wherein:
said first link is connected at a first end portion to said back assembly, at a second end portion to said seat assembly and between said first and second end portions to said frame assembly; and
said third link is connected at a first end portion to a front portion of said seat assembly and at a second end portion to said second link.
14. The chair of claim 1 wherein:
movement of said seat assembly from an upright neutral position induces deformation of said biasing member and a biasing force to return said seat assembly to said upright neutral position.
15. The chair of claim 1 wherein:

said first pivot is located more rearwardly and upwardly than said second, third and fourth pivots;

said second pivot is located more rearwardly and upwardly than said third and fourth pivots; and

said third pivot is located more rearward and upwardly than said fourth pivot.

16. The chair of claim 1 wherein:

said first pivot is fixed in position relative to said frame assembly;

said second pivot is movable relative to said frame assembly;

said third pivot is fixed in position relative to said frame assembly;

said fourth pivot is movable relative to said frame assembly;

said first pivot is located more rearwardly and upwardly than said second, third and fourth pivots;

said second pivot is located more rearwardly and upwardly than said third and fourth pivots; and

said third pivot is located more rearward and upwardly than said fourth pivot.

17. The chair of claim 16 wherein:

from an upright position a weight shift by a chair occupant causes said seat assembly to tilt downwardly thereby tilting said back assembly forwardly toward said seat assembly; and

from an upright position a weight shift by a chair occupant causes said back assembly to tilt rearwardly and said seat assembly to lift.

18. The chair of claim 17 wherein:

said seat assembly moves at a lesser rate than said back assembly.

19. The chair of claim 17 wherein:

movement of said back assembly causes said first link to move said seat assembly;

movement of said seat assembly pivots said second link; and

pivoting said second link causes said biasing member to deform.

20. The chair of claim 19 wherein:

movement of said seat assembly induces stress in said biasing member.

21. The chair of claim 20 wherein:

movement of said seat assembly from an upright neutral position induces deformation of said biasing member and a biasing force to return said seat assembly to said upright neutral position.

22. The chair of claim 21 wherein:

said first link is connected at a first end portion to said back assembly, at a second end portion to said seat assembly and between said first and second end portions to said center frame; and

said third link is connected at a first end portion to a front portion of said seat assembly and at a second end portion to said second link.

23. The chair of claim 1 wherein:

from an upright position a weight shift by a chair occupant causes said seat assembly to tilt downwardly thereby tilting said back assembly forwardly toward said seat assembly;

from an upright position a weight shift by a chair occupant causes said back assembly to tilt rearwardly and said seat assembly to lift;

movement of said back assembly causes said first link to move said seat assembly;

movement of said seat assembly pivots said second link; and

pivoting said second link causes said biasing member to deform.

24. The chair of claim 23 wherein:

movement of said seat assembly induces stress in said biasing member.

25. The chair of claim 24 wherein:

movement of said seat assembly from an upright position induces deformation of said biasing member and a biasing force to return said seat assembly to said upright neutral position.

26. The chair of claim 25 wherein:

said first pivot is fixed in position relative to said frame assembly;

said second pivot is movable relative to said frame assembly;

said third pivot is fixed in position relative to said frame assembly;

said fourth pivot is movable relative to said frame assembly;

said first pivot is located more rearwardly and upwardly than said second, third and fourth pivots;

said second pivot is located more rearwardly and upwardly than said third and fourth pivots; and

said third pivot is located more rearward and upwardly than said fourth pivot.

27. The chair of claim 26 wherein:

said first link is connected at a first end portion to said back assembly, at a second end portion to said seat assembly and between said first and second end portions to said frame assembly; and

said third link is connected at a first end portion to a front portion of said seat assembly and at a second end portion to said second link.